1. Choose the interval below that f composed with g at $x = -2$ is in.

$$f(x) = -2x^3 - 4x^2 + x - 1 \text{ and } g(x) = -2x^3 - 3x^2 + x$$

A. $(f \circ g)(-2) \in [31, 36]$

B. $(f \circ g)(-2) \in [-34, -26]$

C. $(f \circ g)(-2) \in [24, 26]$

D. $(f \circ g)(-2) \in [-38, -35]$

E. It is not possible to compose the two functions.

2. Choose the interval below that f composed with g at $x = -1$ is in.

$$f(x) = 4x^3 + 4x^2 - 2x \text{ and } g(x) = 2x^3 - 2x^2 - 3x - 1$$

A. $(f \circ g)(-1) \in [-2, 7]$

B. $(f \circ g)(-1) \in [-17, -9]$

C. $(f \circ g)(-1) \in [5, 16]$

D. $(f \circ g)(-1) \in [-8, -1]$

E. It is not possible to compose the two functions.

3. Determine whether the function below is 1-1.

$$f(x) = (5x - 26)^3$$

A. Yes, the function is 1-1.

B. No, because the range of the function is not $(-\infty, \infty)$.

C. No, because there is a y-value that goes to 2 different x-values.

D. No, because there is an x-value that goes to 2 different y-values.

E. No, because the domain of the function is not $(-\infty, \infty)$.

4. Find the inverse of the function below. Then, evaluate the inverse at $x = 10$ and choose the interval that $f^-1(10)$ belongs to.

$$f(x) = e^{x-3} - 5$$

A. $f^{-1}(10) \in [5.61, 5.73]$

B. $f^{-1}(10) \in [-3.24, -2.83]$

C. $f^{-1}(10) \in [-0.54, -0.06]$

D. $f^{-1}(10) \in [-3.66, -3.28]$

E. $f^{-1}(10) \in [-2.64, -2.19]$

5. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = -14$ and choose the interval that $f^-1(-14)$ belongs to.

$$f(x) = \sqrt[3]{2x - 5}$$

A. $f^{-1}(-14) \in [-1373.5, -1362.5]$

B. $f^{-1}(-14) \in [1371.5, 1375.5]$

C. $f^{-1}(-14) \in [1369.5, 1370.5]$

D. $f^{-1}(-14) \in [-1374.5, -1371.5]$

E. The function is not invertible for all Real numbers.

6. Find the inverse of the function below. Then, evaluate the inverse at $x = 5$ and choose the interval that $f^-1(5)$ belongs to.

$$f(x) = e^{x-2} - 2$$

A. $f^{-1}(5) \in [3.7, 4.98]$

B. $f^{-1}(5) \in [-0.07, 1.7]$

C. $f^{-1}(5) \in [-0.93, -0.88]$

D. $f^{-1}(5) \in [-0.93, -0.88]$

E. $f^{-1}(5) \in [-0.07, 1.7]$

7. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 10$ and choose the interval that $f^{-}1(10)$ belongs to.

$$f(x) = 4x^2 - 5$$

A. $f^{-1}(10) \in [0.71, 1.71]$

B. $f^{-1}(10) \in [3.05, 4.01]$

C. $f^{-1}(10) \in [4.69, 5.8]$

D. $f^{-1}(10) \in [1.81, 2.61]$

E. The function is not invertible for all Real numbers.

8. Multiply the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = 9x + 7 \text{ and } g(x) = \sqrt{-3x - 9}$$

A. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-6.33, -0.33]$

B. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-6, 0]$

C. The domain is all Real numbers except $x = a$, where $a \in [2.33, 8.33]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-7.83, -1.83]$ and $b \in [1.2, 7.2]$

E. The domain is all Real numbers.

9. Determine whether the function below is 1-1.

$$f(x) = -12x^2 - 167x - 575$$

A. No, because the domain of the function is not $(-\infty, \infty)$.

B. No, because the range of the function is not $(-\infty, \infty)$.

C. Yes, the function is 1-1.

D. No, because there is a y-value that goes to 2 different x-values.

E. No, because there is an x-value that goes to 2 different y-values.

10. Add the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = 3x^4 + 6x^3 + 4x^2 + 5x \text{ and } g(x) = \sqrt{-6x - 18}$$

A. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-8.83, -0.83]$

B. The domain is all Real numbers except $x = a$, where $a \in [5.33, 6.33]$

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-7, 1]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-1.17, 4.83]$ and $b \in [5.25, 11.25]$

E. The domain is all Real numbers.